



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/720,515	11/25/2003	Mizunori Ezaki	245934US2TTCRD	5157
22850	7590	09/23/2005	EXAMINER	
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			NGUYEN, DUNG T	
			ART UNIT	PAPER NUMBER
			2828	

DATE MAILED: 09/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/720,515

Applicant(s)

EZAKI ET AL.

Examiner

Dung (Michael) T. Nguyen

Art Unit

2828



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9, 11-15 and 17-20 is/are rejected.
- 7) ☒ Claim(s) 10 and 16 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 02/25/04
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-2, 5, 8-9, 13-15, and 19 are rejected under 35 U.S.C. 102(e) as being anticipated by Johnson et al. (2005/0190812).

With respect to claims 1, 5, 8, 13, and 19, Fig.8 shows 13 a vertical-cavity surface emitting laser diode comprising: a substrate 160; an active layer 176 provided on the substrate and having a emitting part; a first and a second reflectors 172 and 180 sandwiching the active layer therebetween and forming a laser cavity vertical to the substrate; a pair of electrodes 168 and 184 provided to inject an electric current (Fig.2) into the active layer; and an oxidizee layer (para.0046) provided above the active layer; a mesa 164 being formed to include the oxidizee layer, and the oxidizee layer having an oxidized part 212 of a high resistance extending from a side wall 204 of the mesa to a proximity of the emitting part, a non-oxidized part (para.0046) of a low resistance surrounded by the oxidized part, and a proton-containing part including proton 218 (para.0055) at least at a position substantially enclosing the non-oxidized part.

Art Unit: 2828

With respect to claims 2, 9, and 15, Fig.8 and para.0046 disclose the proton containing part provided selectively near a boundary between the oxidized part and the non-oxidized part, and not provided near a center of the non-oxidized part.

With respect to claim 14, Fig.8 and para.0046 disclose the proton containing part provided selectively near a boundary between the oxidized part and the non-oxidized part, and not provided near a center of the non-oxidized part, one of the electrodes 184 which is provided above the active layer 176 has an opening to release a light emitted from the active layer, and the opening is larger than an portion of non- oxidized part which is inner than the proton-containing part (the bottom oxidizee layer of Fig.8).

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3, 6, 11, 17, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Johnson et al. (2005/0190812) in view of Jewell (5881085). Johnson disclose all limitations of the claims except for the concentration of proton of  $1 \times 10^{18}/\text{cm}^3$ .

Jewell teach the concentration of proton of  $1 \times 10^{18}/\text{cm}^3$  (col.13, 1.59-60).

Art Unit: 2828

It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide Johnson what is taught by Jewell in order to decrease the oxidation rate for the non-implanted region (col.13, l.60-62).

Claims 4, 7, 12, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Johnson et al. (2005/0190812) in view of Ezaki (2003/0063649). Johnson disclose all limitations of the claims except for the film which gives a tensile stress to the active layer.

Ezaki teach the film which gives a tensile stress to the active layer (para.0143).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide Johnson what is taught by Ezaki in order to decrease a compression stress applied to the active layer (para.0143).

#### *Allowable Subject Matter*

Claims 10 and 16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

#### **Communication Information**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dung (Michael) T Nguyen whose telephone number is (571) 272-1949. The examiner can normally be reached on 8:30 - 17:00.

Art Unit: 2828

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Min Harvey can be reached on (571) 272-1835. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 306-3329.



JAMES MCCAFFEE

Michael Dung Nguyen